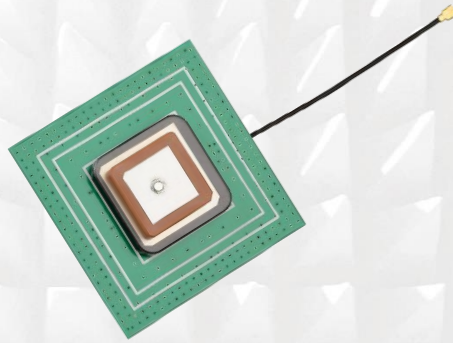




Antenna Datasheet

Product OC: YG0030AA

Version: 5.1

Date: 2023-11-29

Status: Released

Product Name: Passive GPS L1 & L5 Antenna

Key Features:

Frequency Band: 1565–1586 MHz; 1164–1189 MHz

Dimensions: 50 × 50 × 9.3 mm

Efficiency: Up to 60.6 %

RoHS and REACH Compliant

Overview

This Quectel GNSS antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's positioning products support single-band or multi-band operation modes to meet various high-precision positioning requirements of customers' products. Quectel also provides both passive and active antennas to satisfy the customer demand for high gain. Such antenna supports different installation or connection methods such as pin mount, surface mount, magnetic mount, internal cable, and external SMA. Customized connector type and cable length are provided according to requirements.

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1 Specification

Test Condition: In Free Space

1.1. Electrical

Electrical	
Frequency Range	1565–1586 MHz; 1164–1189 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

Band Frequency (MHz)	GPS L5 GALILEO E5a BEIDOU B2a-B2I QZSS L5 IRNSS L5	GALILEO E5b BEIDOU B2b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GPS L1 GALILEO E1 BEIDOU B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.3	-	-	-	-	-	1.2	-
Return Loss (dB)	-18.7	-	-	-	-	-	-20.8	-
Efficiency (%)	52.7	-	-	-	-	-	58.7	-
Peak Gain (dBi)	1.1	-	-	-	-	-	1.2	-
Axial Ratio (dB)	1.4	-	-	-	-	-	2.3	

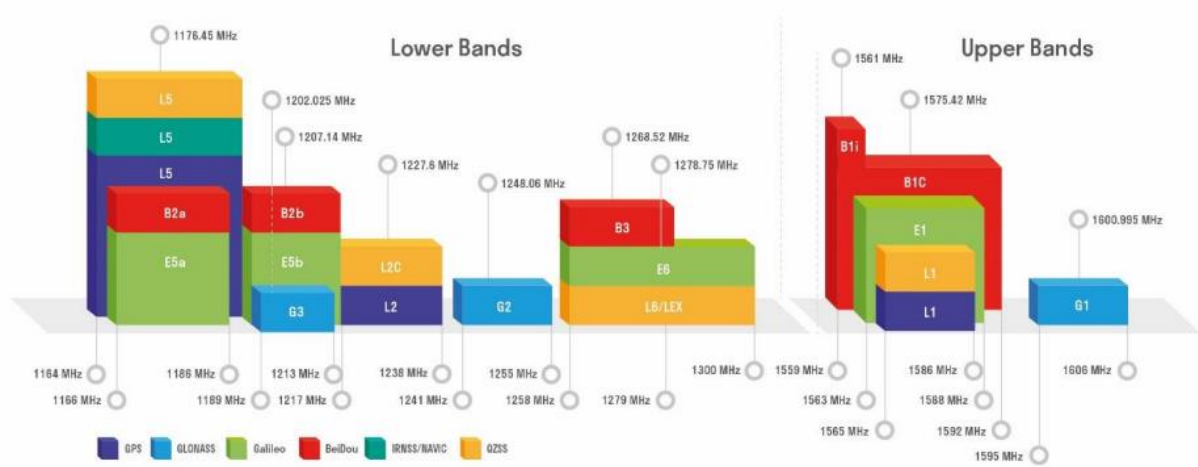
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	50 × 50 × 9.3 mm
Material	PCB + Ceramic
Cable Type & Color & Length	Φ 1.13 & Black & 60 mm
Connector Type	IPEX MHF 1
Mounting Type	Buckle
Weight	Typ. 25.4 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

1.3. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
GPS	L1 Centre 1575.42 (1565–1586)	L2 Centre 1227.6 (1217–1238)	L5 Centre 1176.45 (1164–1189)		
	√	-	√		
GLONASS	G1-L10C-L10F Centre 1601 (1595–1606)	G2-L20C-L20F Centre 1248.06 (1241–1255)	G3-L30C Centre 1202.025 (1189–1213)		
	-	-	-		
GALILEO	E1 Centre 1575.42 (1563–1588)	E5a Centre 1176.45 (1166–1187)	E5b Centre 1207.14 (1197–1218)	E6 Centre 1278.75 (1258–1300)	
	√	√	-	-	
BEIDOU	B1I Centre 1561.098 (1559–1564)	B1C (BeiDou-3) Centre 1575.42 (1559–1592)	B2a Centre 1176.45 (1166–1187)	B2b-B2I Centre 1207.14 (1197–1217)	B3 Centre 1268.52 (1258–1279)
	-	√	√	-	-
QZSS	L1 Centre 1575.42 (1573–1578)	L2C Centre 1227.6 (1226–1229)	L5 Centre 1176.45 (1166–1187)	L6 Centre 1278.75 (1257–1300)	
	√	-	√	-	
IRNSS	L5 Centre 1176.45 (1164–1189)				
	√				

GNSS Bands and Constellations

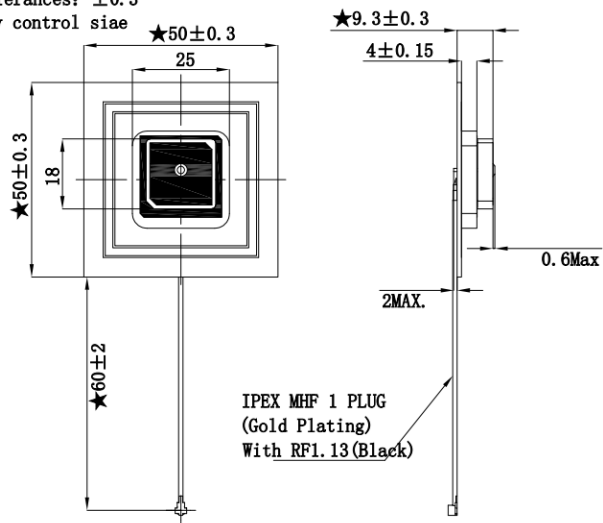


2 Drawing

UNIT: mm

General tolerances: ± 0.3

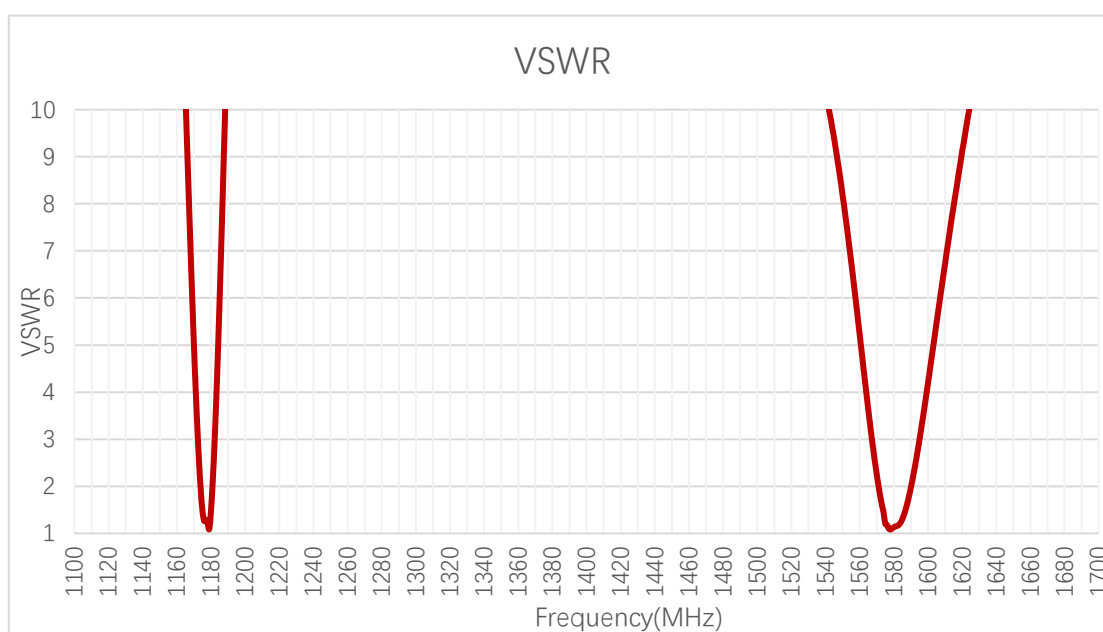
"★" For key control size



3 Detailed Performance

3.1. S-Parameter Test

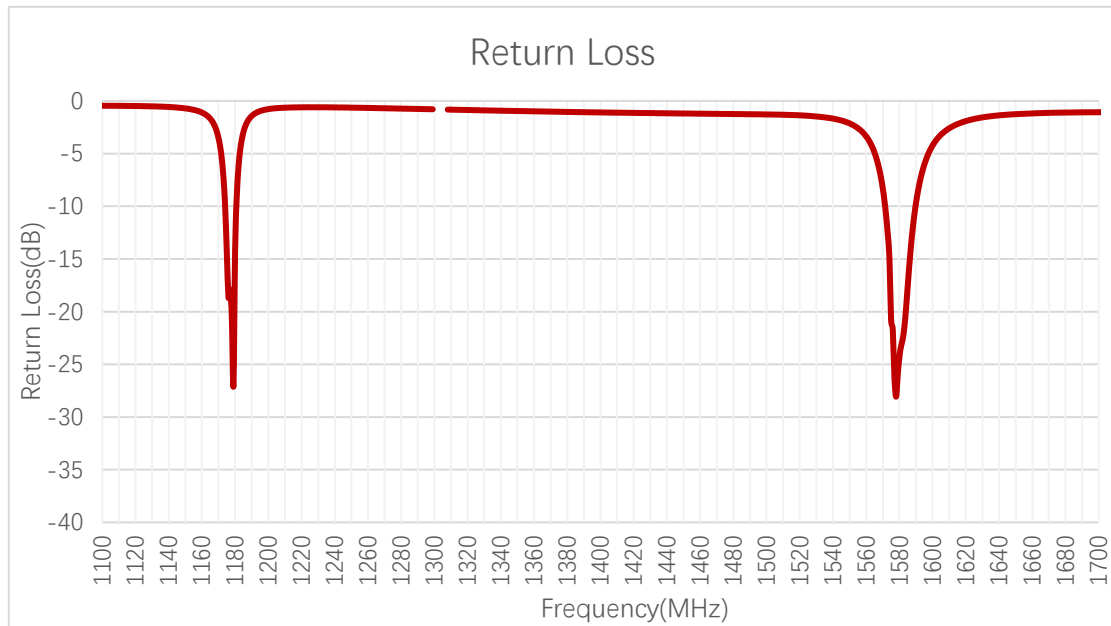
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.3	-	-	-	-	-	1.2	-

3.1.2. Return Loss

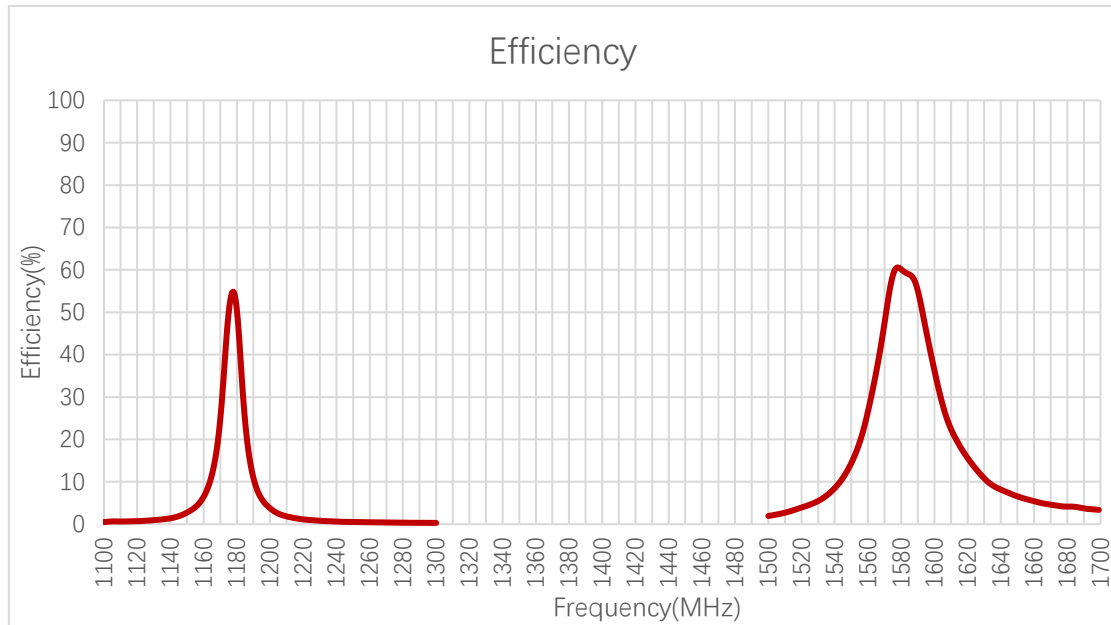


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-18.7	-	-	-	-	-	-20.8	-

3.2. Radiation Performance Test

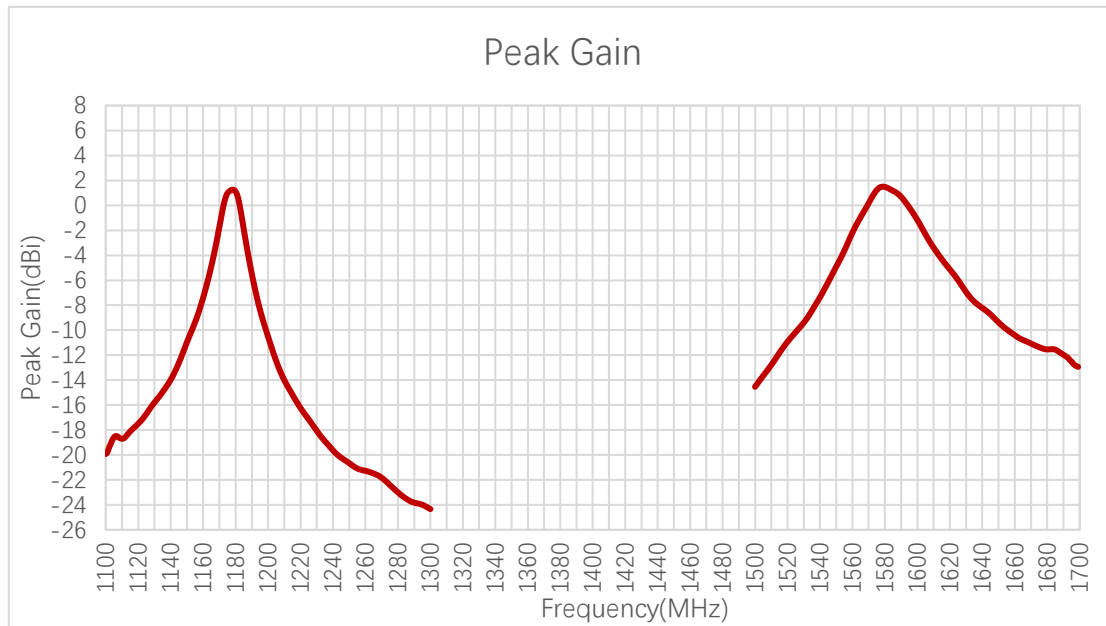
3.2.1. Efficiency



Efficiency (%)

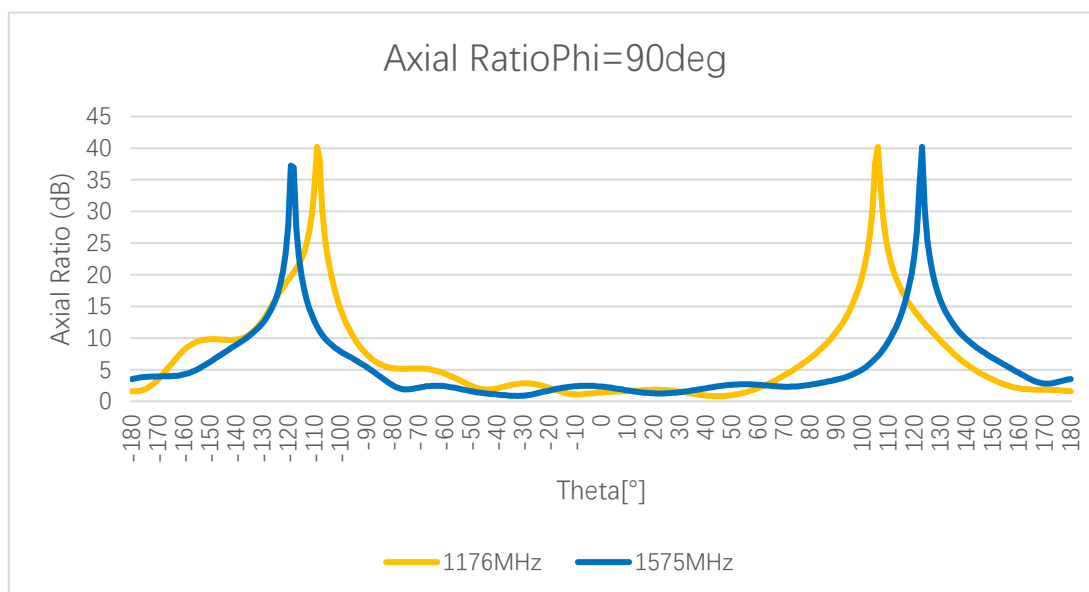
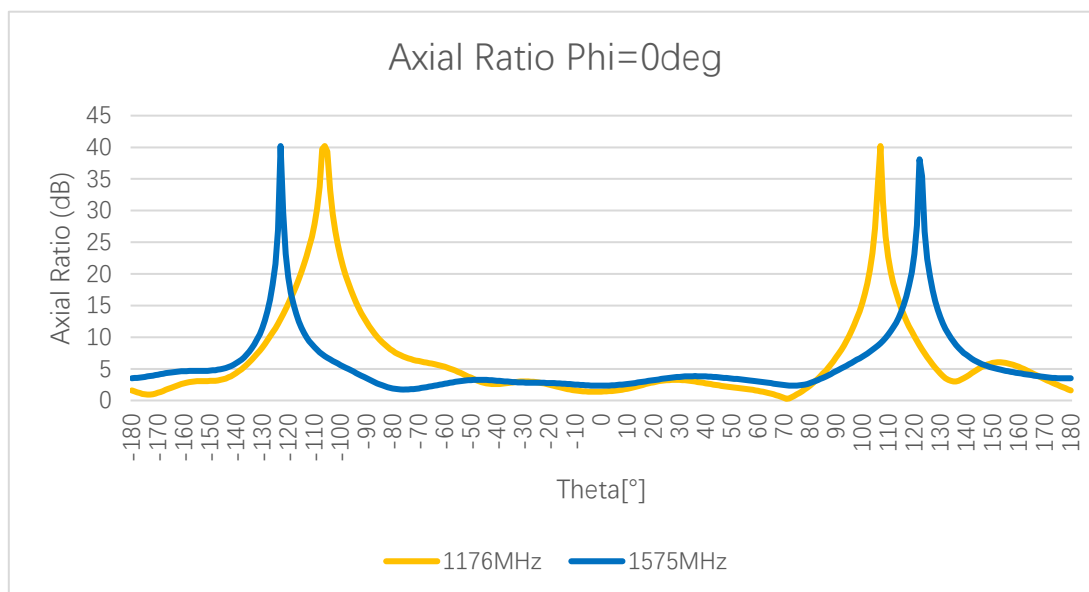
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	52.7	-	-	-	-	-	58.7	-

3.2.2. Peak Gain



Peak Gain (dBi)								
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	1.1	-	-	-	-	-	1.2	-

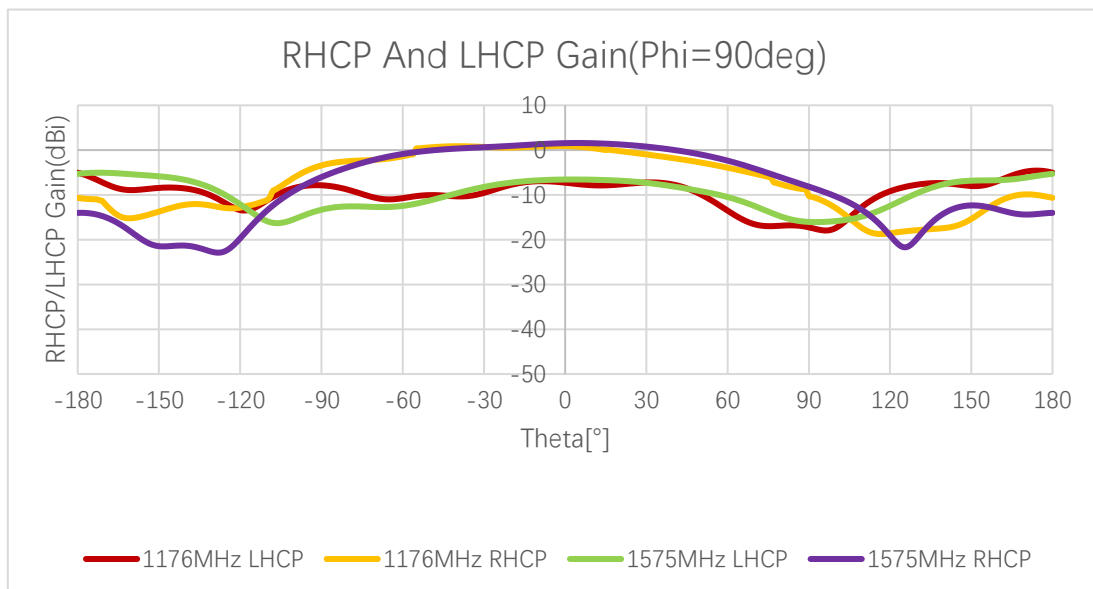
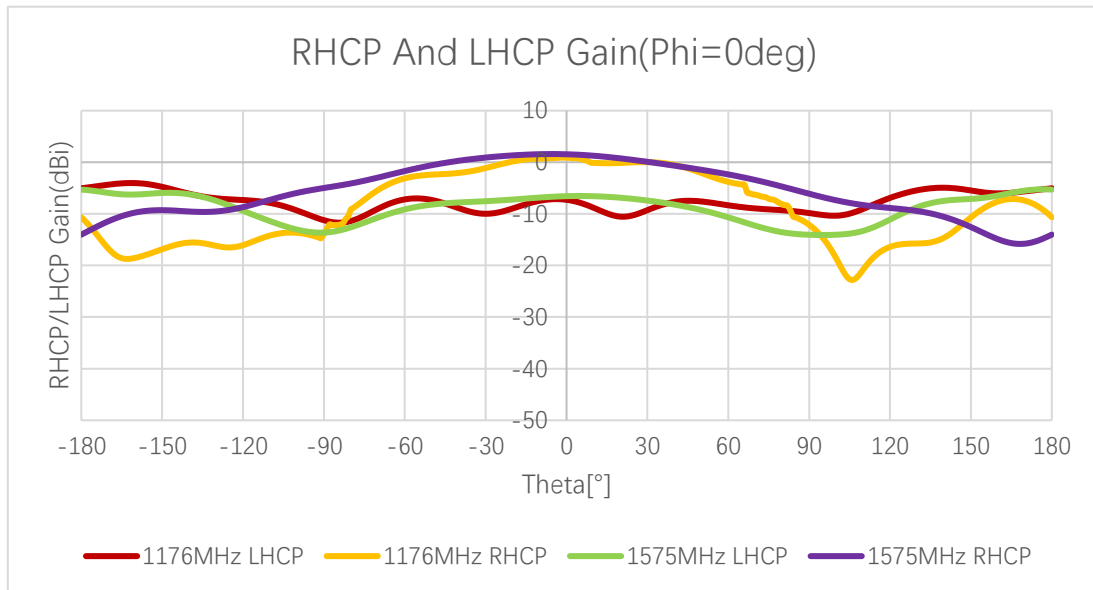
3.2.3. Axial Ratio



Axial Ratio (dB)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	1.4	-	-	-	-	-	2.3	-
	Phi = 90 (deg) Theta = 0 (deg)	1.4	-	-	-	-	-	2.3	-

3.2.4. 2D RHCP and LHCP Gain

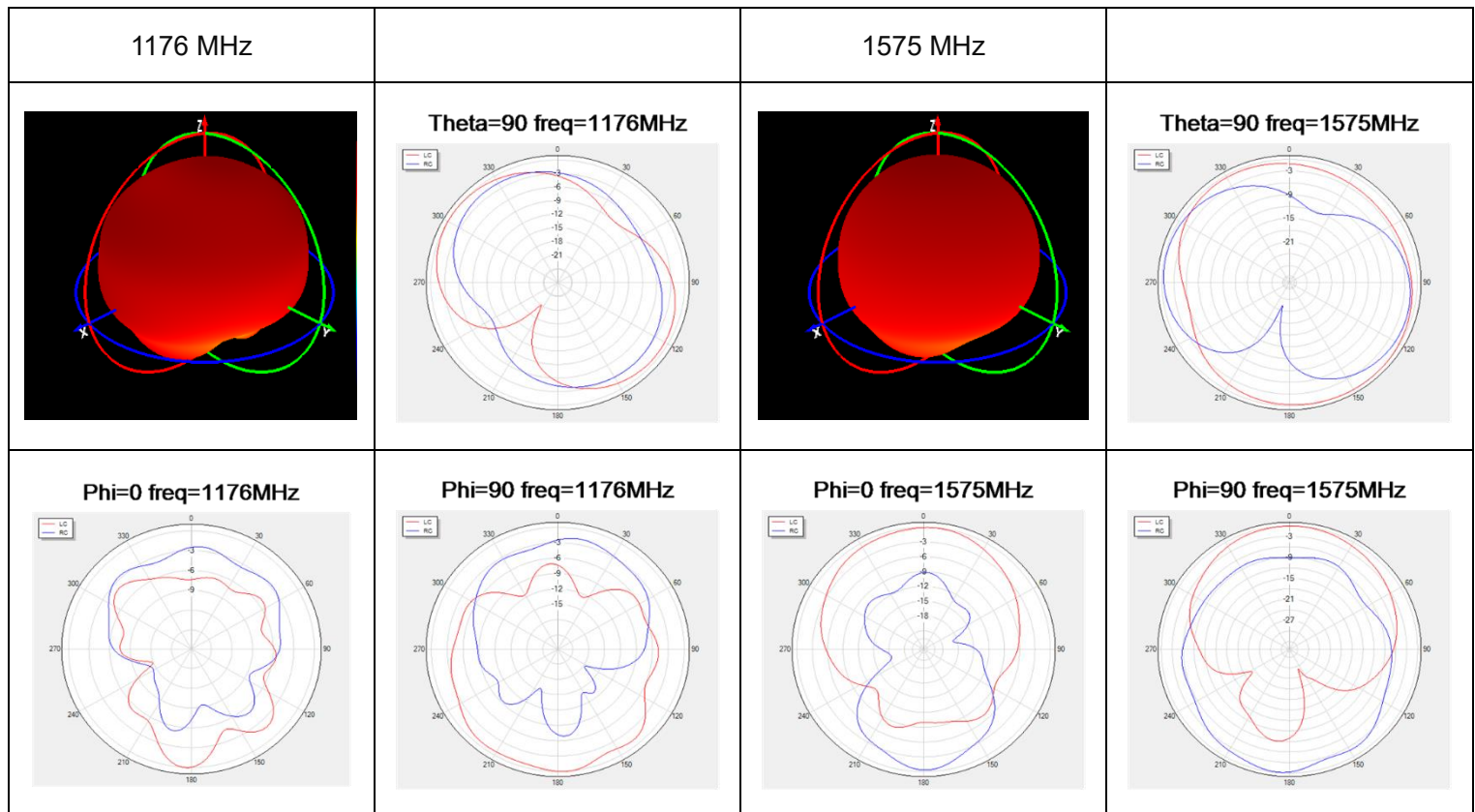
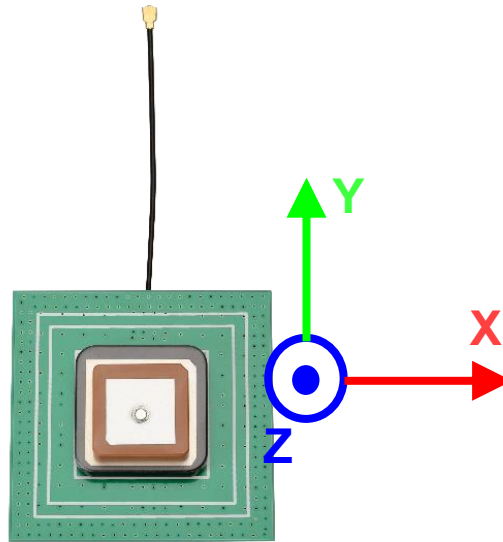


2D RHCP and LHCP Gain (dBi)

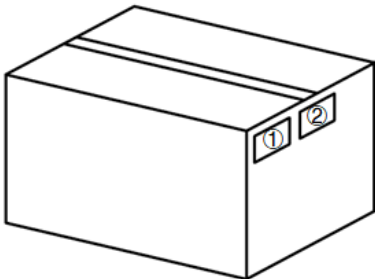
Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
RHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	0.9	-	-	-	-	-	1.5	-
	Phi = 90 (deg) Theta = 0 (deg)	0.9	-	-	-	-	-	1.5	-
LHCP Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-7.3	-	-	-	-	-	-6.6	-
	Phi = 90 (deg) Theta = 0 (deg)	-7.3	-	-	-	-	-	-6.6	-

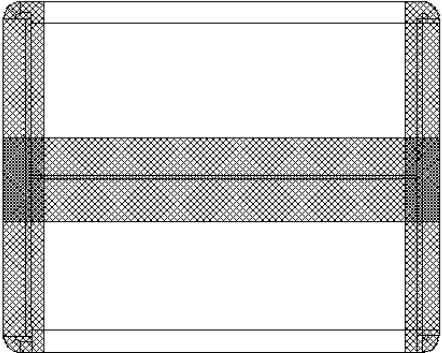
3.2.5. 3D & 2D Radiation Pattern

- Test Condition: In Free Space
- Test Chamber: GL-S-1



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		One pearl cotton tray holds 20 products.
2		(7 pearl cotton trays per carton box) (140 pcs antennas per carton box) <u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u>
3		Position for Attaching Labels ① Carton Label ② Quality Label

4		Sealing Cartons “工” type sealing cartons
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Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Tel: +86 21 5108 6236

Email: info@quectel.com

Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2020-10-14	Kenny YIN	Creation of the document
1.0	2020-10-14	Kenny YIN	First official release
2.0	2021-01-18	Kenny YIN	Updated the antenna image (Chapter 2) and the electrical performance and product size (Chapters 3–5).
3.0	2021-04-26	Aria CHU	Updated all test data in the datasheet.
4.0	2021-05-28	Aria CHU	Updated all test data in the datasheet.
4.1	2021-06-09	Aria CHU	Added the axial ratio of 1561 MHz and 1601 MHz (Chapter 4.7).
4.2	2021-08-13	Xiaodong YANG	Added Chapter 3.
4.3	2021-09-13	Junsen LI	Updated the information of product specifications (Chapter 4).
4.4	2021-12-05	Junsen LI	Updated the product description (Chapter 1)
5.0	2023-08-31	Black LI/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
5.1	2023-11-29	Lucky FENG	Added REACH Compliant (Chapter 1.2).



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